5030

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH / APRIL - 2019

DECE - FIRST YEAR EXAMINATION
BASIC ELECTRICAL ENGINEERING

Time : **3** Hours]   [Total Marks : **80**

PART - A   2×15=30

Instructions :   (1) *Answer any* **15** *questions.*
                     (2) *Each question carries* **2** *marks.*
                     (3) *Answer should be brief and straight to the point and shall not exceed five simple sentences.*

1   Define Electric potential and mention its units.

2   What are the limitations of ohm's law ?

3   Define electric power and mention its units.

4   Define thermal efficiency.

5   Define : (a) magnetic flux and (b) magnetic flux density.

6   Define the terms : (a) waveform and (b) cycle of an a.c.

7   Define Q-factor of a coil.

8   Define : (a) Rms value and (b) form factor of a sinusoidal a.c.

9   Why a series resonant circuit is called as an acceptor circuit ?

10   State the methods of solving A.C. Circuits connected in parallel.

11 Compare series and parallel resonant circuits in any four aspects.

12 What are advantages of polyphase system over single phase system ?

13 List different types of power plants.

14 Define line voltage and phase current.

15 Compare star connected system and delta connected system in any two aspects.

16 List the losses in a DC machine.

17 Define slip and write its equation.

18 State general electrical safety rules.

19 List out the precautions to be taken to prevent accidents while using machines.

20 List out the causes of fire and fire accidents in industry.

PART - B   10×5=50

Instructions :   (1) Answer any **FIVE** questions.

                        (2) Each question carries **TEN** marks.

                        (3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

21 (a) Derive an expression for the equivalent resistance when   6
         three resistors are connected in series.

    (b) When two resistances of 5 ohms and 20 ohms are   4
         connected in parallel across a 240 volt supply,
         calculate the total current flowing in the circuit.

22	(a)	Compare magnetic circuit and electric circuit in any five aspects.	5
	(b)	Derive the expression for energy stored in a magnetic field.	5
23	(a)	State and explain coulomb's laws of electrostatics.	5
	(b)	What are the indications of a fully charged cell ?	5
24	(a)	Explain the chemical reactions that take place during charging and discharging of a lead-acid battery.	7
	(b)	Compare primary cell and secondary cell.	3
25	(a)	Explain the effects of flow of AC through pure resistance.	7
	(b)	Define the terms : (a) Impedance and (b) Admittance in a.c. circuits.	3

26 (a) Perform the following operations and express the result   4
         in a polar form :

(i)   A + B   (ii) A – B   (iii) A × B   (iv) A/B

where, A = 6 + j8 and B = 3 – j4.

(b) A coil with resistance of 40 ohm and inductance of   6
     0.75 H forms part of a series circuit for which the
     resonant frequency is 55 Hz. Calculate.

(i)   the line current

(ii) the power factor and

(iii) the voltage across the coil.

27	(a)	Derive the EMF equation of a DC Generator.	6
	(b)	Calssify DC Generators.	4
28	(a)	Explain the working principle of an Alternator.	5
	(b)	Explain the working of capacitor start single phase Induction motor.	5

————————

www.manaresults.co.in